

4.7 LIVESTOCK AND GRAZING

4.7.1 Impacts Common to All Alternatives

Impacts to livestock and grazing resources would occur under all of the proposed alternatives. The impacts could include those caused by road and trail construction and maintenance, wellpad construction, vehicle traffic, accidental spills of potentially hazardous materials, and noxious weed infestations.

Controlling livestock movement by maintaining fence lines would serve to maintain efficient livestock and range management.

While new roads, trails, and wellpad construction produce adverse impacts such as removing forage. The construction of new roads and trails associated with the proposed alternatives would provide beneficial impacts for livestock permittees from improved access to remote facilities and grazing areas. Also, the development of road systems within the VPA would improve livestock dispersal, thereby improving livestock foraging efficiency as cattle are better dispersed across the landscape due to improved access to forage and water sources. However, increased access could produce an increased disturbance to livestock, an increased number of undesignated roads/trails, and increased distribution problems associated with unclosed cattle gates and/or gaps created in cut fences. Vehicles would also present a potential collision hazard to livestock.

For all of the alternatives, fugitive dust caused by vehicles traveling along proposed new roads, existing roads, and other areas of surface disturbance could settle on vegetation used as forage, especially alongside roadway corridors with heavy traffic. This dust would potentially affect the quality and regenerative capacity of roadside grasses and forbs as well as decrease the palatability of the forage for livestock use.

Livestock forage would also be potentially impacted by spills and/or disposal of produced water from coal bed (CBM) activities, and spills of fuels, solvents, or drilling fluids.

Areas of disturbed soil would lead to invasion by noxious weeds or other undesirable opportunistic plant species. These species would reduce rangeland and forage values by replacing preferred forage species, leading to a reduction in grazing capacity. Without proper management and control, invasive plant species become established and cause severe infestations. Additionally, some invasive species are poisonous to livestock and can kill or impair them if ingested.

Under the proposed alternatives for riparian resources, many areas have proposed riparian management improvements that limit or reduce soil disturbance and manage for greater vegetative cover. Impacts from these management alternatives are generally projected to have minor impacts on livestock grazing, except as they relate to improved vegetation cover in currently impaired areas, or potential reduction in intensity or exclusion of grazing in currently impaired areas being managed for the recovery of vegetation. Long-term effects are expected to include the required development of grazing management plans to achieve appropriate vegetation utilization as per BLM guidelines.

For all of the alternatives, wild horse management decisions would generally have an indirect relationship to impacts upon livestock grazing, mostly in regards to forage availability. In terms of AUMs and categories of use, forage would be managed and designated to livestock, wildlife, and/or wild horses. Thus, if AUM designation were changed for wild horses, it could affect

livestock and wildlife, or it could affect wildlife only. See Section 4.22.2.3.1 for specific foraging decisions that affect livestock in terms of wild horses.

Several areas have proposed wildlife and fisheries management decisions that would limit or reduce access and disturbance seasonally or year-round. Impacts from the proposed designations are generally projected to have relatively minor effects on livestock grazing. Impacts specific to decisions regarding the provision of habitat and forage, and potential emigration and reintroduction of Rocky Mountain bighorn sheep, bison, and moose, would include some changes in forage availability and use-priority. Combined with prescribed fire and other vegetation treatment options, including enhanced distribution and access to water and impacts to livestock grazing from wildlife and fisheries management, would be minor.

For proposed travel decisions under all of the alternatives, many areas have proposed recreation management actions that would increase on- and off-trail activities and OHV use. Impacts to livestock grazing from these management decisions would be moderately adverse in that they would result in increased human-caused noise, dust, and vegetation disturbance, and allow a greater opportunity for harassment of grazing animals. Intense recreational activities would exclude livestock use in the same area unless uses were separated in time. Increased human-caused impacts would include potential harassment of livestock, potential for OHVs to move off of designated roads and trails, potentially producing vegetation losses due to illegal trails, and the potential cutting of fences or leaving gates open affecting proper livestock distribution. Under Alternative D – No Action, designated routes would not exist, which would allow visitors to travel throughout the allotments. Four open or “play” areas exist close to Vernal, Utah. These areas are designated as “open” for OHV use. While these areas are limited in forage production, they are located within existing allotments. Due to the level of impact, these areas would be considered lost in the calculation of forage production because these areas effectively change the allotment boundaries. The mean number of AUMs per acre of land within the VPA is 0.06 AUMs (standard deviation of 0.04). Assuming this average loss per acre of land open to OHV use, the number of lost AUMs for these areas under Alternatives A, B, and C, would be up to 372, 326, and 326 AUMs respectively. There is no way to effectively quantify the amount of AUMs that have currently been lost due to the 787,859 acres of area open to OHV use under Alternative D. However, it is assumed that future loss of AUMs by continuing to leave these areas open would be much higher than would be experienced under the more controlled OHV use proposed under Alternatives A, B, and C.

Under the proposed alternatives, areas would be proposed for woodland and forest management improvements that limit or reduce soil disturbance and manage for greater vegetation cover. Impacts from these management alternatives are generally projected to have relatively minor impacts on livestock grazing, except as they related to improved vegetation cover and more additional forage in currently impaired areas.

4.7.2 Alternative Impacts

Management decisions specific to the identified alternative have the potential to impact livestock grazing to the following degrees:

- Impacts to livestock grazing from fire management decisions, livestock grazing management decisions, rangeland improvements, riparian management decisions, vegetation management decisions, and woodland and forest management decisions are

projected to be directly beneficial and provide both short- and long-term improvements in forage health and availability, habitat improvements, and water access and availability. The use of fire as a management tool may lead to some areas being unavailable for foraging in the short term, but in the long term would act to improve overall conditions and reduce the chance for catastrophic wildland fire damage.

- Impacts on livestock grazing from forage management decisions could result in increases or decreases in total AUMs, depending on the alternative. Increases in forage utilization in some areas of the VPA could occur where range improvements are planned. Without careful management, long-term impacts could be adverse, as increased utilization can result in decreased forage quality over time. Additional impacts would be related to the potential for unallocated AUMs to be allocated to wildlife.
- Impacts from special status species and wildlife and fisheries management decisions are projected to be adversely small to moderate on livestock grazing, as management for the increased needs of bighorn sheep could result in the reduction of grazing opportunities and changes in priority forage utilization for livestock.
- Impacts from recreation and travel-based management decisions are expected to be adversely small to moderate on livestock grazing as related to increases in noise, dust, soil and vegetation disturbances, and harassment from humans. The majority of these projected impacts are assumed to be the result of proposed increases in motorized travel and access opportunities.
- Impacts associated with mineral management decisions would be potentially adverse to livestock grazing, as they represent the potential loss of AUMs from mining, well-pad and access road construction, and the construction of support facilities. Other potentially adverse impacts from mineral development would include the production of fugitive dust, increased livestock management needs, decreased livestock dispersal, noxious and invasive weed encroachment, and the physical risks of livestock/vehicle collisions associated with increased vehicle traffic in grazing areas.
- Impacts from cultural resource management decisions, paleontological resources, land and realty management decisions, paleontological decisions, soils and watershed management decisions, special designations, and visual resource management decisions are projected to have minor or negligible impacts on livestock grazing except as they impact other management decisions as outlined above. These categories will not be discussed in detail in this alternatives analysis.

4.7.2.1 Impacts of Fire Management Decisions on Livestock Grazing

4.7.2.1.1 Alternative A, B, and C

This alternative identifies the potential for approximately 156,425 acres per decade to be treated by prescribed fire. Section 4.6.2.4 disclosed the effects of livestock grazing decisions on fire management. Livestock grazing management decisions would need to be coordinated with fire management decisions. While general areas have been identified for prescribed fire treatments, decisions regarding where fire would be prescribed would be determined by the Fire Management Plan and would be dependant upon the status of the vegetation and the seasonal and annual meteorological conditions. Therefore, it is very difficult to quantify potential impacts to

livestock grazing. Prescribed burning is a useful tool for resource management and would be used to enhance forage for cattle and to reduce hazardous fuel loads.

The direct effects of prescribed fire and fire treatments as a tool for forage and fuels management would be large for livestock grazing, both in the short and long term. Cumulatively, the use of prescribed fire would have beneficial impacts, and would outweigh the short-term impacts associated with the use of prescribed fire or other fire treatments as a management tool.

Generally, the short-term livestock grazing effects from prescribed burn and/or other fire treatments would include the exclusion of livestock (and other related activities) from treated areas for approximately three growing seasons (typically, one growing season prior to treatment and two seasons post-treatment). This would result in a short-term reduction in available grazing acreage and associated AUMs where prescribed burning or other fire treatments coincide with grazed areas.

The long-term direct effects from prescribed burns would include improvement in the health, biomass, and diversity of forage. Studies on prescribed fire in other areas have shown that cattle gains were much greater on burned range than on unburned range during the spring and two to three times higher for the entire season. Also, the cattle showed a strong preference for recently burned areas, when the burned areas were available for grazing (FDOF 2000). The use of prescribed burning is an irreplaceable tool in maintaining biological diversity and ecological balance. Prescribed burns, as well as wildland fire, could effectively produce an increase in forage for livestock, wildlife, and wild horses. Decisions to potentially increase AUMs would be authorized on a temporary/non-renewable basis for the affected allotments.

In conclusion, while the use of prescribed burning as a management tool would result in some short-term losses of grazing areas, the long-term beneficial impacts of its application far outweigh the projected short-term impacts. Prescribed fire has the potential to improve forage and presents a much lower risk to livestock grazing than wildland fire burning over the same area.

4.7.2.1.2 Alternative D – No Action

This alternative identifies the potential for approximately 50,900 acres per decade to be treated by prescribed fire. The description of impacts under Alternative D – No Action would be generally the same as Alternative A, with a difference in magnitude of both impacts and benefits associated with the difference in total acres treated. In comparison, Alternatives A, B, and C would have greater beneficial impacts on livestock grazing from fire treatments and prescribed burning than Alternative D – No Action.

4.7.2.2 Impacts of Forage Management Decisions on Livestock Grazing

4.7.2.2.1 Alternative A

The determination of the season of use under Alternative A was based on plant phenology to ensure that the physiological needs of plants would be met. Therefore, Alternative A would focus on the needs of plants in both seasons of use and utilization levels, thereby producing minimal impacts to rangeland health. Within the VPA, a total of 137,838 AUMs would be allocated to livestock, a total of 104,871 AUMs would be allocated to wildlife, and 2,940 AUMs would be allocated to wild horses. This would result in an approximate 5.7 percent AUM reduction for livestock as compared to Alternative D – No Action, as 8,264 AUMs would be reallocated from

livestock to wildlife. Overall reductions in forage use would be 1.0 percent. Within the uplands in the VPA, up to 50 percent use of forage would be allowed unless otherwise specified by a management plan. Although all action alternatives reduce forage availability from current conditions for livestock, Alternative A would beneficially impact livestock much more than Alternative C but not as much as Alternative B.

As the number of AUMs is directly related to the amount of available forage for grazing, the short- and long-term, direct impacts can be similarly anticipated whenever AUMs are used as a quantitative measure of impact. In the short term, Alternative A would beneficially impact livestock. Also, the use of grazing management criteria (see Section 2, Alternatives) to maintain or improve rangeland conditions, would over the long term, maintain adequate forage production levels for livestock, wildlife, and wild horse use. Minor indirect impacts as a result of the implementation of Alternative A would occur to the ranching community but not individual ranchers due to the reduction in AUMs.

Under Alternative A, allowable utilization on upland would be 50 percent. This level of utilization would be considered proper use because plant health would be maintained and adequate root growth would be allowed to occur. Alternative A would result in the least impact to rangeland health, similar to Alternative C.

4.7.2.2.2 Alternative B

The determination of season of use under Alternative B was based on billed use. The billed use is based on how the permittees are actually billed.

Within the VPA, a total of 139,163 AUMs would be allocated to livestock, a total of 104,871 AUMs would be allocated to wildlife, and no (0) AUMs would be allocated to wild horses. This reallocation in AUMs would be due to the increase in AUMs from acquired private properties, as compared to Alternative A. This alternative would result in an approximate 4.8 percent reduction in AUMs for livestock as compared to Alternative D – No Action. Overall reductions in forage use would be 0.8 percent. Within the uplands of the VPA, up to 60 percent use of forage would be allowed unless otherwise specified by a management plan. All of the action alternatives would reduce forage availability from current conditions for livestock; however, of the action alternatives, Alternative B would be most favorable to livestock.

In the short term, Alternative B would beneficially impact livestock, and the use of grazing management criteria (see Section 2, Alternatives) to maintain or improve rangeland conditions would, over the long-term, maintain adequate forage production levels for livestock and wildlife use. Overall, grazing management criteria under this alternative would be beneficial for livestock management. Minor indirect impacts as a result of the implementation of Alternative B would occur to ranchers due to the reduction in AUMs and to local economies because economic impacts to ranchers.

Under Alternative B, allowable utilization by livestock on upland vegetation would be 60 percent. This level of utilization would not be considered proper use without appropriate grazing management in place that would meet the physiological needs of plants because plant health would not be maintained over the long term and adequate root growth would not be allowed to occur. This alternative would have indirect long-term, adverse impacts on livestock and grazing because of a decline in rangeland health. Alternative B would result in a greater adverse impact to rangeland health than Alternatives A and C, but would be less than Alternative D – No Action.

4.7.2.2.3 Alternative C

The determination of season of use under Alternative C would be based on how grazing was adjudicated in the 1960's. Within the VPA, a total of 77,294 AUMs would be allocated to livestock, a total of 106,196 AUMs would be allocated to wildlife, and a total of 3,960 AUMs would be allocated to wild horses. The number of livestock AUMs was determined by removing historic non-use AUMs from Alternative D – No Action for the life of the management plan. Non-use by permittees would be the result of factors such as private business reasons, livestock market fluctuations, drought conditions, etc. This would result in an approximate 47.1 percent permitted reduction for livestock as compared to Alternative D – No Action, which would have a major adverse impact on the livestock and grazing resource. Overall reductions in forage use would be 24.3 percent. Within the uplands of the VPA, up to 50 percent use of forage would be allowed unless otherwise specified by a management plan. All of the action alternatives would reduce forage availability from current conditions for livestock, and Alternative C is the alternative least favorable to livestock from the standpoint of total available AUMs. However, from a rangeland health perspective, Alternative C would have the most beneficial long-term impacts.

Since the number of AUMs is directly related to the amount of available forage for grazing, the short- and long-term, direct impacts can be similarly anticipated whenever AUMs are used as a quantitative measure of impact. In the short term, Alternative C would provide forage for livestock, although forage would be available for roughly half of the AUMs as compared to Alternative D – No Action. This reduction would have a major impact on the livestock industry within the VPA. However, the total use of AUMs would not realistically differ from current conditions based on the levels of non-use. As with the other alternatives, grazing management criteria would be followed (see Section 2, Alternatives) to maintain or improve rangeland conditions. A long-term, direct adverse impact of Alternative C would be the inability of permittees to expand the size of their operation above current levels within the allotments. This limitation would not allow the number of livestock to increase as markets improve, but increases would be driven by rangeland health. Forage production would likely increase under Alternative C, resulting in increased feed for foraging animals and an improvement in rangeland health. Alternative C would result in indirect impacts to ranchers and their families, to the local economy due to the reduction in livestock AUMs and to local businesses due to the slowed economy. The reduction in permitted AUMs could affect the ability of ranchers to obtain adequate financial resources since federal permits are a recognized value to lending institutions. Fire ecology would also change due to the limited amount of grazing that would be authorized. The increased amount of forage would increase fuel loads, thereby affecting rangeland fire conditions.

Rangeland health would be the driving force of Alternative C. Rangelands would be monitored to ensure that rangeland health standards would be met. As a result, the number of AUMs could increase under Alternative C on a case-by-case basis as directed by improved rangeland health. Under Alternative C, allowable utilization on upland would be 50 percent. This level of utilization would be considered proper use because plant health would be maintained and adequate root growth would be allowed to occur. Alternative C would result in the least impacts to rangeland health, similar to Alternative A, as compared to Alternative D – No Action.

4.7.2.2.4 Alternative D – No Action

The determination of season of use under Alternative D – No Action was based on the permitted use. Season of use, combined with allowable utilization levels would adversely impact rangeland health to the greatest degree among the alternatives. Under this alternative, within the VPA, a total of 146,161 AUMs would be allocated to livestock, a total of 96,607 AUMs would be allocated to wildlife, and a total of 3,360 AUMs would be allocated to wild horses. Forage actions for the uplands in all localities of the VPA are unspecified; therefore, the effects of forage management decisions on livestock grazing cannot be determined at this time. Alternative D – No Action is the alternative most favorable to livestock.

As the number of AUMs is directly related to the amount of available forage, the short- and long-term, direct impacts can be similarly anticipated whenever AUMs are used as a quantitative measure of impact. In the short term, Alternative D – No Action would beneficially impact livestock, and the use of grazing management criteria (see Section 2, Alternatives) to maintain or improve rangeland conditions, would over the long-term, maintain adequate forage production levels for livestock, wildlife, and wild horse use. Minor indirect impacts as a result of the implementation of Alternative D – No Action would occur to ranchers due to the increased amount of forage from range improvement practices.

Under Alternative D – No Action, allowable utilization on upland vegetation and riparian vegetation are unspecified. Depending on the allotment, proper use would potentially not be maintained. Alternative D – No Action would potentially result in the greatest adverse impact to rangeland health, as compared to the other alternatives.

4.7.2.3 Impacts of Mineral Decisions on Livestock Grazing

Activities associated with the exploration and development of mineral resources would have impacts on livestock grazing that would result in: 1) the loss of vegetation and/or the loss of land available for grazing; 2) the disruption of livestock practices; and 3) the loss of grazing capacity due to changes in land management. Livestock grazing and the development of oil and gas and coal bed methane, deposits are assumed to be generally compatible uses in most cases, as exploration activity would be short-term and extraction activities and impacts are expected to have relatively small footprints for equipment and machinery. Development of phosphate, Gilsonite, tar sands, and oil shale resources would result in the long-term removal of lands from grazing activity to a greater extent than the above resource extraction processes. In general, livestock grazing on rangeland would be expected to continue at some level during the development of oil and gas, and coal bed resources.

The potential impacts of mineral development on livestock grazing would be similar for all of the alternatives. The construction of drilling well pads, pipelines, and access roads would remove areas from the forage base, thereby resulting in a decrease in available AUMs for livestock. The actual losses of AUMs as a result of development under each alternative are described separately below. Mineral development would also potentially produce adverse impacts on use patterns due to roadways and fencelines, resulting in the potential fragmentation of the forage resource base. This fragmentation could result in areas where livestock grazing would be avoided or areas where livestock become more concentrated. While the loss in AUMs under any alternative would be relatively low, these other issues pertaining to resource fragmentation could result in a cumulatively greater impact.

The development of roads would have both adverse and beneficial impacts on the grazing resource. Roads would beneficially provide additional access to portions of the allotments that currently do not have access. Roads also have the ability to increase livestock distribution in some areas, but can also disrupt distribution patterns. Increased livestock distribution could occur in some areas that have previously been inaccessible due to terrain limitations, distance from water, or a combination of both. Livestock distribution would be adversely disrupted in some areas because livestock would move along the road network, thereby missing available forage, or livestock could gain access to areas that are not desirable or are too fragile for grazing. Roads would also allow increased vehicular traffic, contributing to potentially adverse disturbance to livestock from OHV users and those seeking dispersed recreational opportunities.

4.7.2.3.1 Analysis Assumptions

In developing this analysis, there was a large degree of recognized uncertainty regarding the magnitude of final development. Uncertainty specific to livestock grazing impacts included the number of wells, type and number of equipment used, specific locations of development, etc. Because of this uncertainty, actual impacts would vary from the projected values and would potentially be affected by the timing of phased development and associated permit requirements. The projected impacts discussed below were based on the following assumptions:

- Losses in grazing area from exploration activities.
- Areas of impact and changes in AUMs were calculated assuming that all mineral extraction activity would be located on grazed lands.
- All impacts to livestock grazing were assessed at the full magnitude of the proposed management alternatives and therefore represent impacts at full development. Initial impacts are expected to be much smaller as all lands will not be developed at the same rate or schedule for any of the proposed alternatives.
- To the extent possible, existing roadways and fence crossings would be used for oil and gas operations rather than new construction in the same vicinity.
- Fugitive dust emissions from roadways were treated as line sources in the air quality model (see Section 4.2.1). This may increase or reduce the predicted maximum loads deposited near roadways depending on meteorology and terrain.
- Other specific assumptions as detailed within this analysis.

4.7.2.3.2 Alternative A

General impacts to livestock grazing from this alternative are projected to be primarily the loss of grazing land from the construction of well pads, other extraction facilities and roads, loss of vegetation available for grazing due to surface disturbance in areas associated with extraction activities, and disruption of livestock management practices due to extraction activities. For the purposes of this analysis, the mean number of AUMs per acre of land within the VPA (0.06) was used to estimate potential loss of AUMs due to mineral development disturbance. Under Alternative A, the total number of AUMs that would be lost in the short-term due to oil and gas well (includes coal bed methane) construction and associated facilities would be 348. Each exploration or extraction site would be unique and would present a different set of specific circumstances. Impacts specific to exploration are expected to be short-term; impacts from extraction activities are expected to last as long as those activities are occurring. Changes in

management that would be necessary are expected to include construction of cattle guards and fences to prevent livestock escape due to the proposed construction of roads and identification of specially designated or restricted areas and pipelines. Total exclusion of grazing is not expected to occur with oil and gas, and CBM development. The total long-term loss in AUMs from constructed physical facilities would be 255 AUMs, which would be 4 percent more than the No Action Alternative.

In the long term, the movement of livestock within the VPA would be hindered, to some degree, by the placement of roads, trails, and well pads or similar extraction-related construction. New roads associated with the proposed alternatives would provide livestock permittees with improved access to remote facilities and grazing areas. Increased vehicle traffic associated with the new roadways (recreational and those associated with mineral exploration and extraction activities) would present a potential physical hazard to livestock proportional to traffic and livestock density. Increased use of the land area by mineral resources would potentially shift grazing locations, resulting in greater grazing pressure on more remote areas.

Fugitive dust from new and existing roadways and other areas of surface disturbance would have adverse impacts on livestock grazing, as it would tend to settle onto forage, especially along roadway corridors with heavy traffic. Such dust has the potential to affect the quality and regenerative capacity of the grasses and forbs. Generally such effects are most severe in an area extending up to 0.25 miles from the roadway. Air quality modeling for this alternative has projected 254 miles of new roads per year, with the potential to generate 120.9 tons of particulates (PM₁₀) per year. Given the 0.25-mile assumption for dust effects, this equates to an area of impact of approximately 350,000 acres, not all of which would be grazed acres.

Additional, potentially adverse impacts are those associated with disposal or spilling of highly saline produced-water from CBM extraction activities, fuels and solvents, and drilling fluid, and the impacts of invasive noxious weeds.

4.7.2.3.3 Alternative B

Short-term, impacts from mineral resource exploration and development for Alternative B would be similar to those described for Alternative A. Under Alternative B, the total number of AUMs that would be lost in the short-term due to oil and gas well (includes coal bed methane) construction and associated facilities would be 349 AUMs. With the exception that air quality modeling for this alternative has projected the construction of 257.3 miles of new roads per year with the potential to generate 122.5 tons of particulate (PM₁₀) per year. Given the assumption of 0.25-mile for dust effects, this equates to an area of impact of approximately 350,000 acres, not all of which would be grazed acres.

Total exclusion of grazing is not expected to occur with oil and gas, and CBM development. The total long-term loss in AUMs from constructed physical facilities would be 256 AUMs, a 5 percent increase in the number of lost AUMs as compared to Alternative D – No Action. The long-term impacts would be similar to those described for Alternative A.

4.7.2.3.4 Alternative C

Short-term impacts from mineral resource exploration and development for Alternative C would be similar to those described for Alternative A. Under Alternative C, the total number of AUMs that would be lost due to oil and gas well (including coal bed methane) construction and

associated facilities would be 344 AUMs in the short term. With the exception that air quality modeling for this alternative has projected the construction of 249.1 miles of new roads per year with the potential to generate 118.7 tons of particulate (PM₁₀) per year. Given the 0.25-mile assumption for dust effects, this equates to an area of impact of approximately 350,000 acres, not all of which would be grazed.

Total exclusion of grazing is not expected to occur with oil and gas, and CBM development. The total long-term loss in AUMs from constructed physical facilities would be 252 AUMs, a 3 percent increase in AUMs lost, as compared to Alternative D – No Action. The long-term impacts would be similar to those described for Alternative A.

4.7.2.3.5 Alternative D – No Action

General impacts from mineral resource exploration and development for Alternative D – No Action are expected to be comparable to those described for Alternative A. Under Alternative D – No Action, the total number of AUMs that would be lost in the short-term due to oil and gas well (includes coal bed) construction and associated facilities would be 334 AUMs. Air quality modeling for this alternative has projected the construction of 250 miles of new roads per year with the potential to generate 119 tons of particulate (PM₁₀) per year. Given the 0.25-mile assumption for dust effects, this equates to an area of impact of approximately 350,000 acres, not all of which would be grazed acres.

Total exclusion of grazing is not expected to occur with oil and gas, and CBM development. The total long-term loss in AUMs would be 245, with impacts similar to those described for Alternative A.

4.7.2.4 Impacts of Rangeland Improvement Decisions on Livestock Grazing

The net impacts to livestock grazing resulting from rangeland improvements would be beneficial in the long term under each of the four alternatives.

4.7.2.4.1 Alternative A

Under this alternative, direct impacts would include the short-term, adverse impacts of displacement of livestock while improvements are made, and the long-term, beneficial impacts of improvements to grazing allotments. The rangeland improvement management actions comprising Alternative A would have the least number of acres improved, as compared to the other alternatives.

Displacement of cattle would occur as a result of vegetation treatments. Cattle would be displaced for two growing seasons from a total of 34,640 acres of vegetation while it is being treated. Cattle would be temporarily and intermittently displaced during construction of approximately 68.5 linear miles of fenceline. This displacement would occur for the short term (i.e., pre-construction and the time needed to construct a portion of the fence in a particular allotment) and from a very small area (i.e., a construction zone to be designated on either side of the fence centerline). Cattle would be temporarily and intermittently displaced during development of 812 guzzlers and/or reservoirs, 51 wells and/or springs, and 37.5 miles of pipeline within their allotments. The more favorable grazing conditions would result from the three kinds of improvement actions. After two growing seasons, a total of 34,640 acres of improved/increased forage would be available. After construction of the 68.5 linear miles of

fenceline, grazing areas would be more clearly delineated and that would result in better livestock management. Finally, more water would be available to cattle after installation of 812 guzzlers and/or reservoirs and 51 wells and/or springs, as well as the pipelines.

Improved management practices, coupled with rangeland improvements would result in improved wildlife habitat, potential benefits to Threatened and Endangered (T&E) species, improved conditions for and security to permit holders, increased flexibility during times of drought, and potential improvements to scenic quality.

4.7.2.4.2 Alternative B

Under this alternative, direct impacts would include the short-term, adverse impacts of livestock displacement while improvements are being made, and the long-term, beneficial impacts of improvements to grazing allotments. The rangeland improvement actions comprising Alternative B would have the greatest number of acres improved, as compared to the other alternatives.

Displacement of cattle would occur as a result of the three kinds of improvement actions, as described under Alternative A. Cattle would be displaced for two growing seasons from a total of 50,900 acres of vegetation while it is being treated. Cattle would be temporarily and intermittently displaced during construction of 368.5 linear miles of fenceline. This displacement would be in the short term and from a very small area, as described under Alternative A. Cattle would be temporarily and intermittently displaced during development of 1,165 guzzlers and/or reservoirs and 78 wells and/or springs within their allotments. Cattle would also be temporarily and intermittently displaced during construction of 51 linear miles of water pipeline. This displacement from pipeline construction would occur in the short term and from a small area, as described under Alternative A.

More favorable grazing conditions will result from the three kinds of improvement actions. After two growing seasons, a total of 50,900 acres of improved/increased forage would be available. After construction of the 368.5 linear miles of fenceline, grazing areas would be more clearly delineated. Finally, more water would be available to cattle after installation of 1,165 guzzlers and/or reservoirs and 78 wells and/or springs, as well as the pipeline.

Improved management practices, coupled with rangeland improvements, would produce beneficial impacts to rangeland and wildlife habitat similar to those described under Alternative A.

4.7.2.4.3 Alternative C

Under this alternative, direct impacts include the short-term, adverse impacts of displacement of livestock while improvements are made and the long-term, beneficial impacts of improvements to grazing allotments. The rangeland improvement actions comprising Alternative C will improve current rangeland more than Alternatives A and D – No Action but less than Alternative B.

Displacement of cattle would occur as a result of the three kinds of improvement actions, as described under Alternative A. Cattle would be displaced for two growing seasons from a total of 45,860 acres of vegetation while it is treated. Cattle would be temporarily and intermittently displaced during construction of 129 linear miles of fenceline. This displacement would occur for a short duration and from a very small area. Cattle would be temporarily and intermittently displaced during development of 811 guzzlers and/or reservoirs and 87 wells and/or springs

within their allotments. Cattle would also be temporarily and intermittently displaced during construction of 29.5 linear miles of water pipeline. This displacement from pipeline construction would occur in the short term and from a small area, as described under Alternative A.

More favorable grazing conditions would result from the three kinds of improvement actions, as described under Alternative A. After two growing seasons, a total of 45,860 acres of improved/increased forage would be available. After construction of the 129 linear miles of fenceline, grazing areas would be more clearly delineated. Finally, more water would be available to cattle after installation of 811 guzzlers and/or reservoirs and 87 wells and/or springs, as well as the pipeline.

Improved management practices, coupled with rangeland improvements would result in beneficial impacts similar to those described under Alternative A.

4.7.2.4.4 Alternative D – No Action

Under this alternative, direct impacts include the short-term, adverse impacts of displacement of livestock while improvements are made and the long-term, beneficial impacts of improvements to grazing allotments. The rangeland improvement actions composing Alternative D – No Action would improve current rangeland more than Alternative A but less than Alternative B and C.

Displacement of cattle would occur as a result of the three kinds of improvement actions described under Alternative A. Cattle would be displaced for two growing seasons from a total of 40,390 acres of vegetation while it is being treated. Cattle would be temporarily and intermittently displaced during construction of 65 linear miles of fenceline. This displacement would occur in the short term and from a very small area, as described under Alternative A. Cattle would be temporarily and intermittently displaced during development of 775 guzzlers and/or reservoirs and 74 wells and/or springs within their allotments. Cattle would also be temporarily and intermittently displaced during construction of 35 linear miles of water pipeline. This displacement from pipeline construction would occur in the short term and from a small area.

More favorable grazing conditions would result from the three kinds of improvement actions, as described under Alternative A. After two growing seasons, a total of 40,390 acres of improved/increased forage would be available. After construction of the 65 linear miles of fenceline, grazing areas would be more clearly delineated. Finally, more water would be available to cattle after installation of 775 guzzlers and/or reservoirs and 74 wells and/or springs, as well as the pipeline.

Improved management practices, coupled with rangeland improvements would result in beneficial impacts similar to those described under Alternative A.

4.7.2.5 Impacts of Vegetation Management Decisions on Livestock Grazing

4.7.2.5.1 Alternative A, B, and C

Vegetation in the resource planning area would be managed using prescribed burning on approximately 156,425 acres per decade, and using rangeland improvements, with impacts similar to those described in Section 4.9.2.1 and 4.9.2.4.

No short- or long-term indirect effects of vegetation management, except those associated with Fire Management and Rangeland Improvements are expected to impact grazing.

4.7.2.5.2 Alternative D – No Action

Generally the impacts would be the same as Alternatives A, B, and C, with a difference in magnitude of both impacts and benefits, which would be associated with the difference in acres treated for wildland fire and for rangeland improvements.

4.7.2.6 Summary

4.7.2.6.1 Alternative A

This alternative would provide resource protection for livestock grazing by maintaining forage utilization at proper use, while allowing low impact to rangeland health. However, there would be a 3-4 percent anticipated loss of AUMs from minerals development and the least number of acres treated for improvements under rangeland improvement management actions.

4.7.2.6.2 Alternative B

Alternative B would produce short-term conditions favorable to livestock, but long-term adverse impacts to rangeland health by exceeding forage production capacity. The percentage of AUMs lost to minerals development would be the highest of the action alternatives. Though, this alternative would have the highest number of acres treated for rangeland improvements.

4.7.2.6.3 Alternative C

Under Alternative C, the adverse impacts on livestock grazing would be adversely high (by removing the most AUMs from livestock grazing), but the most beneficial to rangeland health. The adverse impacts from AUMs lost to minerals development would be the least of all the action alternatives. Rangeland improvement management actions would be less beneficial than Alternative B, but greater than Alternatives A and D – No Action.

4.7.2.6.4 Alternative D – No Action

Alternative D – No Action would provide the least number of acres for fire treatment, and the produce the greatest long-term adverse impacts to rangeland health. This alternative would provide for rangeland improvements greater than Alternative A, but less than Alternatives B and C.

4.7.3 Mitigation Measures

Timing and location planning and coordination of prescribed burning would be critical in the mitigation of impacts. In some cases, it would be possible to time prescribed burns to avoid coinciding with seasons of peak grazing use. However, it is often necessary to allow a season of rest for a grazing area designated for prescribed burning in order to allow sufficient fuel loads to accumulate. Therefore, since such coordination would typically be impossible, scheduling of prescribed burns should be coordinated with grazing to reduce or disperse the overall impacts between individual allotment holders to the extent possible and avoid undue individual allotment holder hardships.

4.7.4 Unavoidable Adverse Impacts

There would be a short-term, unavoidable adverse impact to grazing from fire and vegetation treatments, which would temporarily reduce grazing areas within the VPA during treatment and vegetation recovery. There would be unavoidable, adverse short- and long-term loss of AUMs from the exploration and development of mineral resources. These losses are described above.

4.7.5 Short-term Uses Versus Long-term Productivity

As discussed in the sections above, short-term uses could be forgone in order to enhance long-term productivity. This is particularly the case with rangeland improvements such as prescribed fire, vegetation manipulation, and vegetation treatment scenarios. As discussed, foregoing short-term uses would greatly enhance the long-term productivity of the resource, thereby producing beneficial long-term outcomes.

4.7.6 Irreversible and Irretrievable Impacts

Long-term surface disturbing activities associated with 1) mineral development and access road construction, 2) OHV use, 3) motorized and non-motorized trail construction would result in irretrievable commitments of resources. Short-term irretrievable commitments of resources would include 1) wildland fire treatments in those areas where grazing would be excluded for several growing seasons, and 2) rangeland improvement projects. There are no irreversible impacts that were identified for livestock and grazing resources.

Chapter Four—Table of Contents
(Section 4.7)

4.7 Livestock and Grazing	4-83
4.7.1 Impacts Common to All Alternatives	4-83
4.7.2 Alternative Impacts	4-84
4.7.2.1 Impacts of Fire Management Decisions on Livestock Grazing.....	4-85
4.7.2.2 Impacts of Forage Management Decisions on Livestock Grazing	4-86
4.7.2.3 Impacts of Mineral Decisions on Livestock Grazing	4-89
4.7.2.4 Impacts of Rangeland Improvement Decisions on Livestock Grazing	4-92
4.7.2.5 Impacts of Vegetation Management Decisions on Livestock Grazing.....	4-94
4.7.2.6 Summary	4-95
4.7.3 Mitigation Measures	4-95
4.7.4 Unavoidable Adverse Impacts	4-96
4.7.5 Short-term Uses Versus Long-term Productivity	4-96
4.7.6 Irreversible and Irretrievable Impacts	4-96

Chapter Four—List of Tables
(Section 4.7)

Error! No table of figures entries found.

Chapter Four—List of Figures
(Section 4.7)

Error! No table of figures entries found.

Chapter Four—Index
(Section 4.7)

Bighorn sheep, 4-84, 4-85
Fire Management Plan, 4-85
noxious weeds, 4-83, 4-91
prescribed fire, 4-84, 4-85, 4-86, 4-96